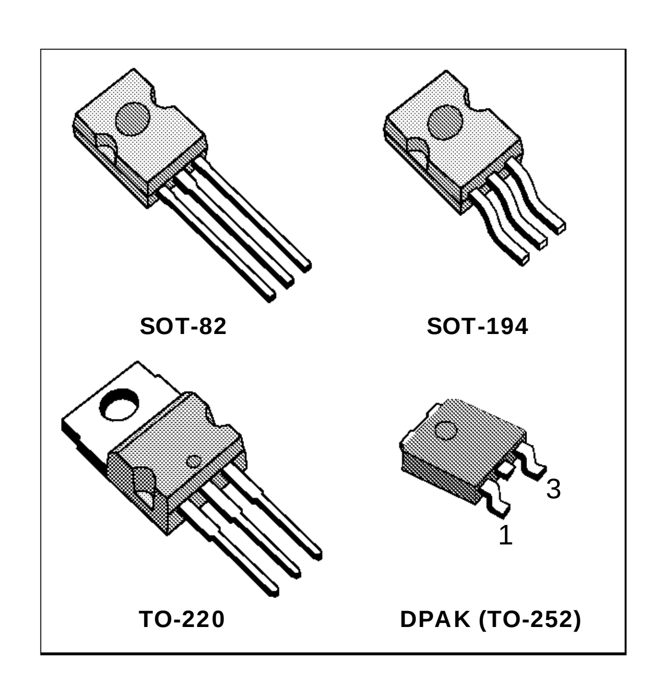


L4941

VERY LOW DROP 1A REGULATOR

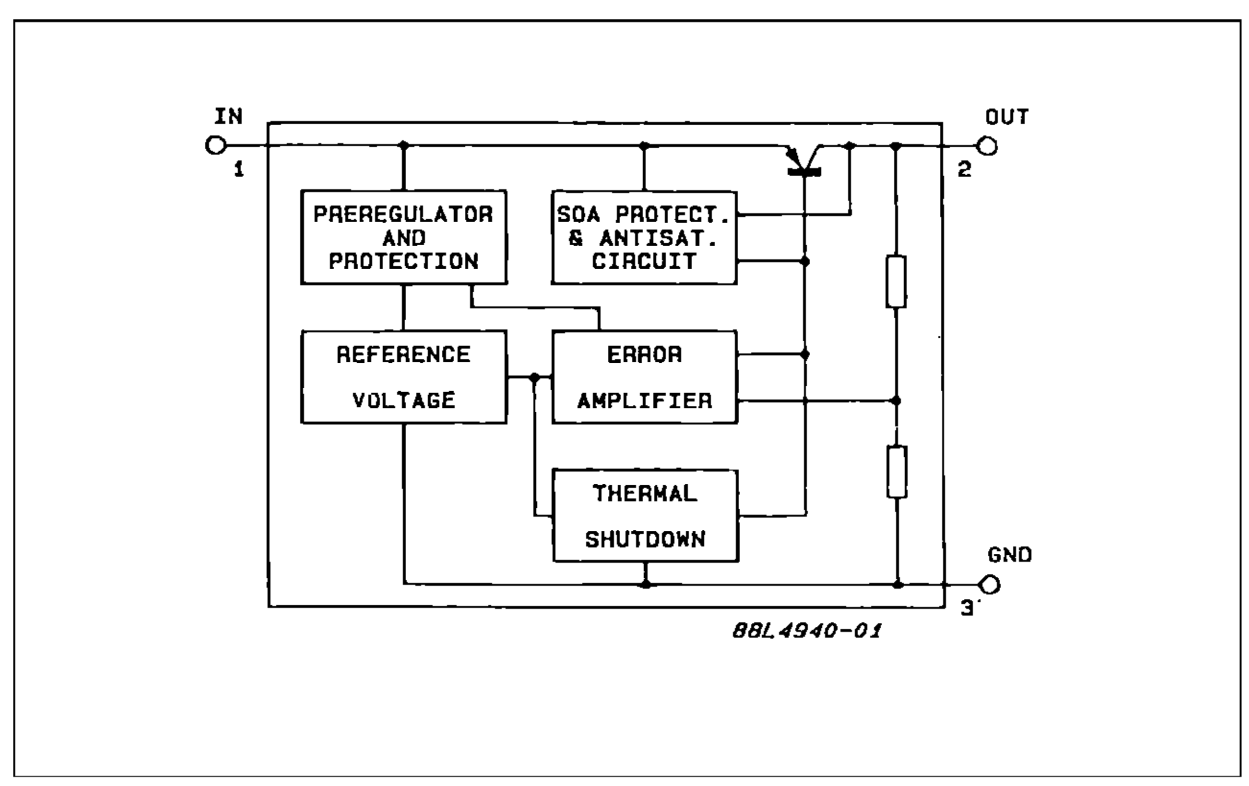
- LOW DROPOUT VOLTAGE (450 mV typ at 1A)
- VERY LOW QUIESCENT CURRENT
- THERMAL SHUTDOWN
- SHORT CIRCUIT PROTECTION
- REVERSE POLARITY PROTECTION



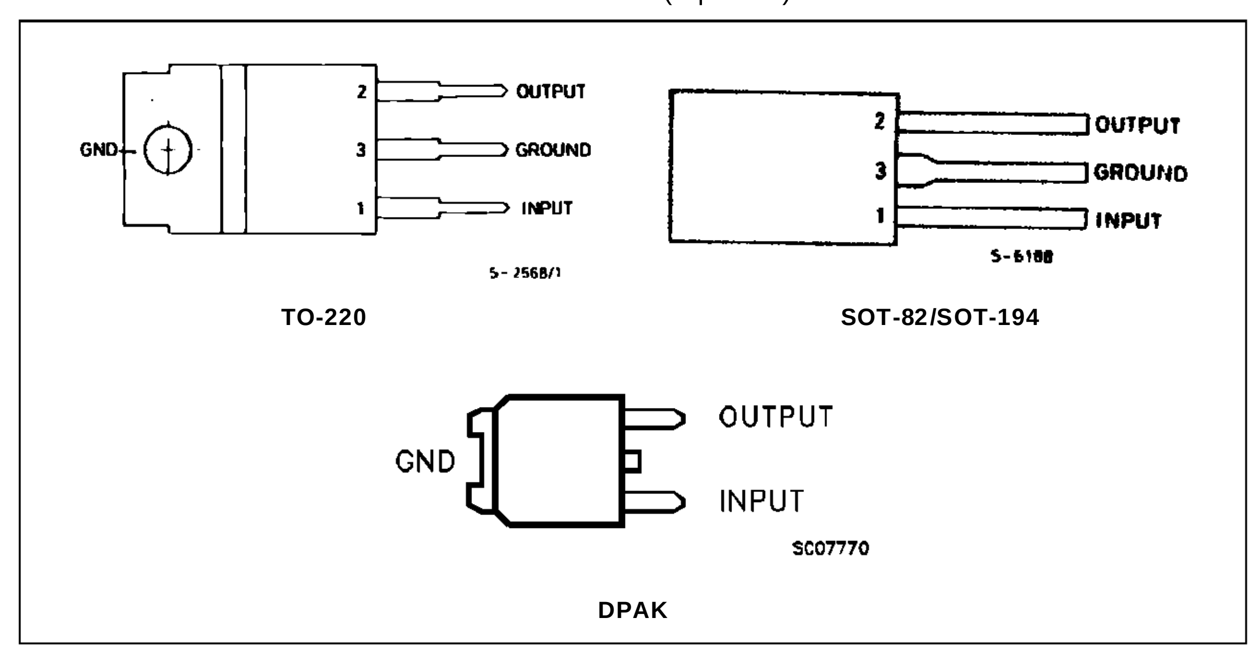
DESCRIPTION

The L4941 is a three terminal 5 V positive regulator available in TO-220, SOT-82, SOT-194 and DPAK packages, making it useful in a wide range of the industrial and consumer applications. Thanks to its very low input/output voltage drop, this device is particularly suitable for battery powered equipment, reducing consumption and prolonging battery life. It employs internal current limiting, antisaturation circuit, thermal shut-down and safe area protection.

BLOCK DIAGRAM



PIN CONNECTIONS AND ORDERING NUMBER (top view)



ORDERING NUMBERS	OUTPUT VOLTAGE	PACKAGE
L4941BV	5V	TO-220
L4941BX	5V	SOT-82
L4941BS	5V	SOT-194
L4941BDT	5V	DPAK

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_i	Forward Input Voltage	30	V
V_{iR}	Reverse Input Voltage (R_O = 100 Ω)	– 15	V
I_O	Output Current	Internally Limited	
P_{tot}	Power Dissipation	Internally Limited	
T_j, T_{stg}	Junction and Storage Temperature	– 40 to 150	°C

THERMAL DATA

			SOT-82 SOT-194 DPAK	TO-220	
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	8	3	°C/W
$R_{thj\text{-}amb}$	Termal resistance Junction-ambient	Max	100	50	°C/W



TEST CIRCUITS

Figure 1 : DC Parameters.

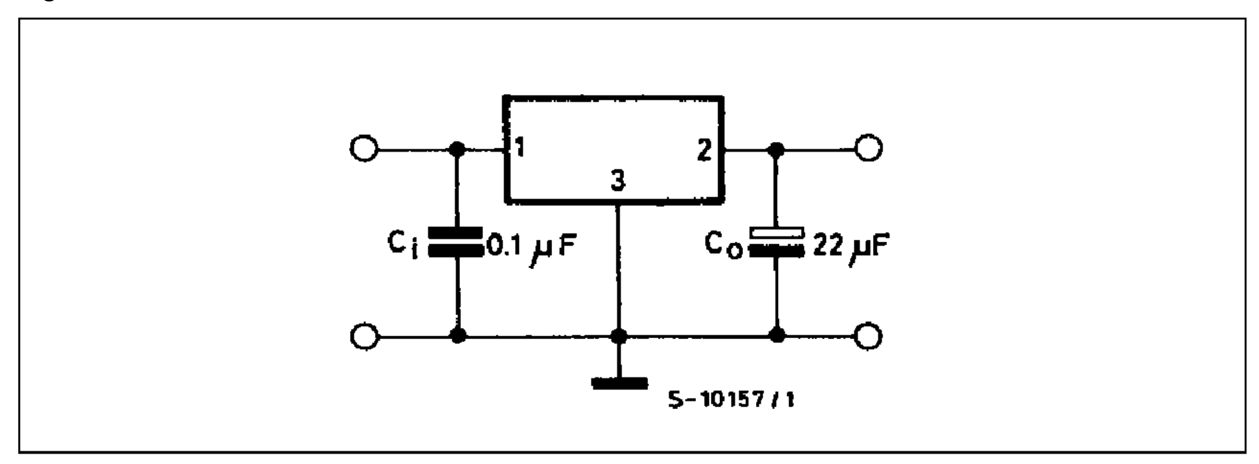


Figure 2 : Load Regulation.

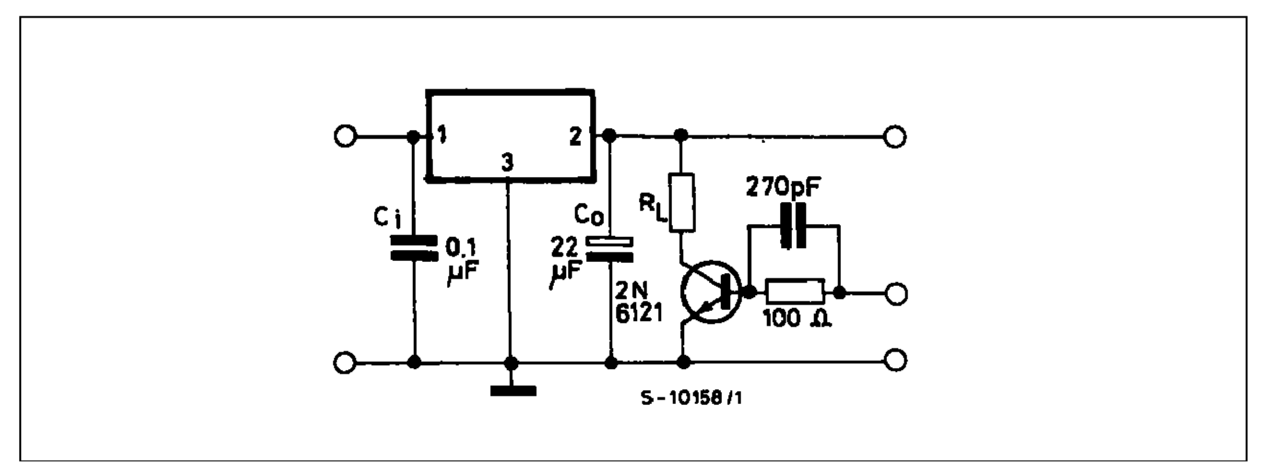
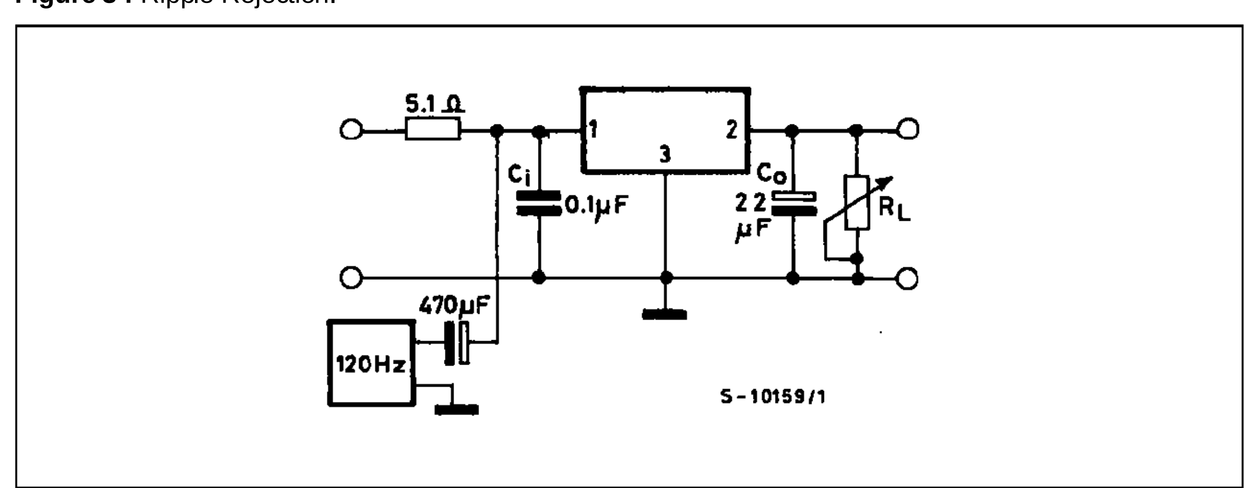


Figure 3 : Ripple Rejection.



ELECTRICAL CHARACTERISTICS (refer to the test circuits T_j = 25 °C, C_i = 0.1 µF, C_o = 22 µF, unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
Output Voltage					5		
Input Voltage (unless otherwise specified)					7		
V_o	Output Voltage	I_o = 5 mA to 1 A V_i = 6 V to 14 V		4.8	5	5.2	V
V_i	Operating Input Voltage	I_o = 5 mA				16	V
ΔV_o	Line Regulation	V_i = 6 V to 16 V I_o = 5 mA			5	20	mV
ΔV_o	Load Regulation	I_o = 5 mA to 1 A I_o = 0.5 A to 1 A			8 5	20 15	mV
I_Q	Quiescent Current	V_i = 6 V	I_o = 5 mA		4	8	mA
			I_o = 1 A		20	40	
ΔI_Q	Quiescent Current Change	V_i = 6 V to 14 V	I_o = 5 mA			3	mA
			I_o = 1 A			– 10	
V_d	Dropout Voltage	I_o = 0.5 A			250	450	mV
		I_o = 1 A			450	700	
$\frac{\Delta V_o}{\Delta T}$	Output Voltage Drift				0.6		mV/°C
SVR	Supply Voltage Rejection	f = 120 Hz I_o = 0.5 A		58	68		dB
I_{sc}	Short Circuit Current Limit	V_i = 14 V			1.6	2.0	A
		V_i = 6 V			1.8	2.2	
Z_o	Output Impedance	f = 1 kHz I_o = 0.5 A			30		mΩ
e_N	Output Noise Voltage	B = 100 Hz to 100 kHz			30		µV/V_o

Figure 4 : Dropout voltage vs. Output Current.

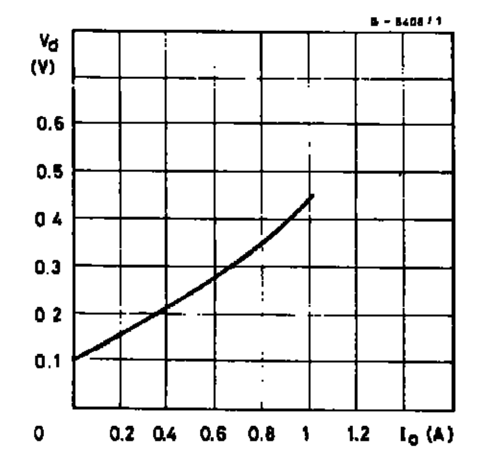


Figure 5 : Dropout Voltage vs. Temperature.

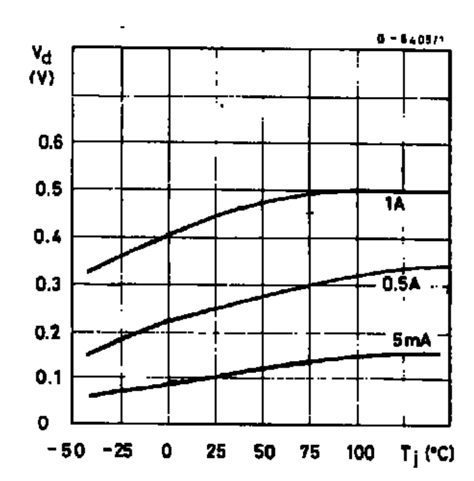


Figure 6 : Output voltage vs. Temperature.

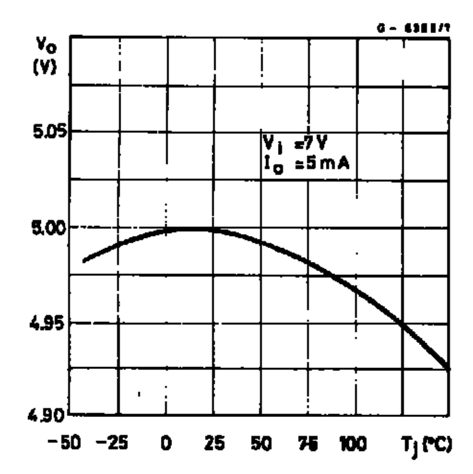


Figure 7 : Quiescent Current vs. Temperature

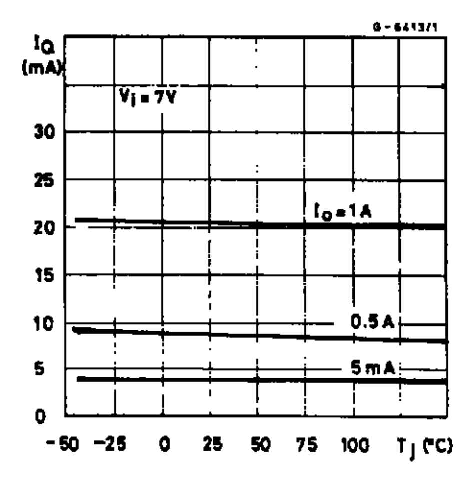


Figure 8 : Quiescent Current vs.Input Voltage.

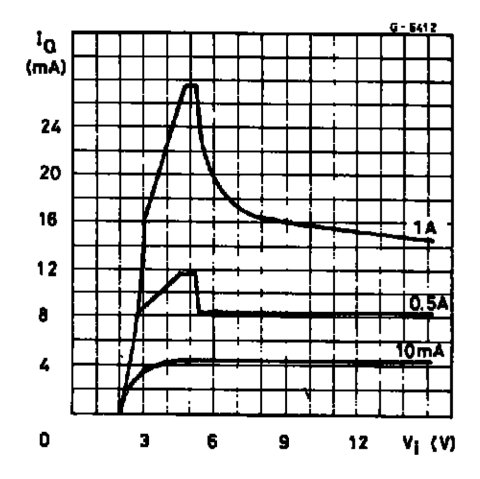


Figure 9 : Quiescent Current vs.Output Current.

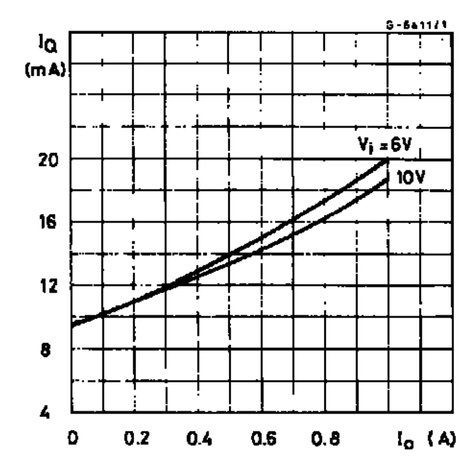


Figure 10 : Short-circuit Current vs. Temperature.

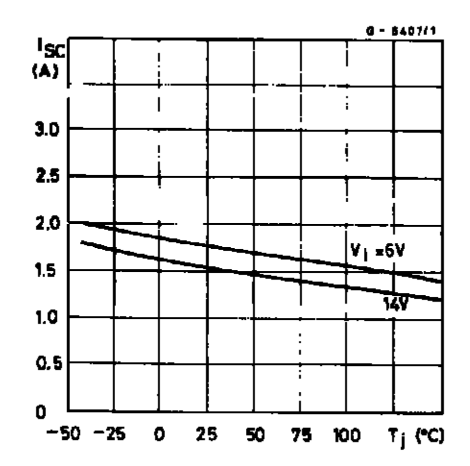


Figure 11 : Peak Output Current vs. Input/Output Differential Voltage.

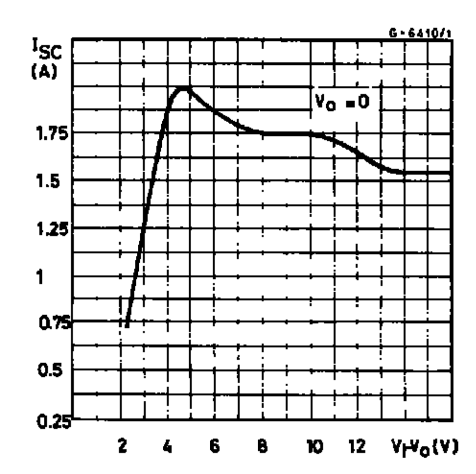


Figure 12 : Low Voltage Behavior.

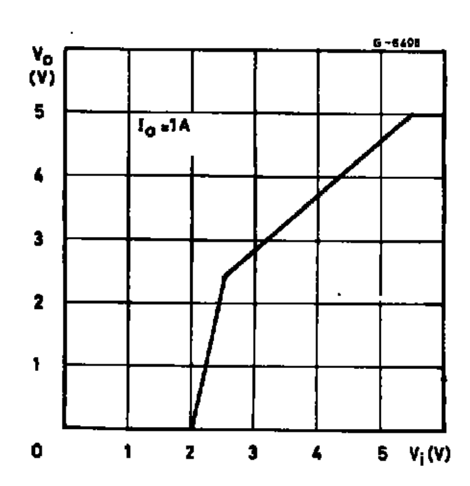


Figure 13 : Supply Voltage Rejection vs. Frequency

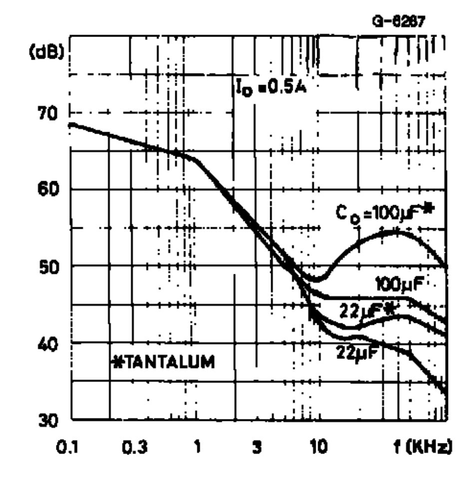


Figure 14 : Supply Voltage Rejection vs. Output Current.

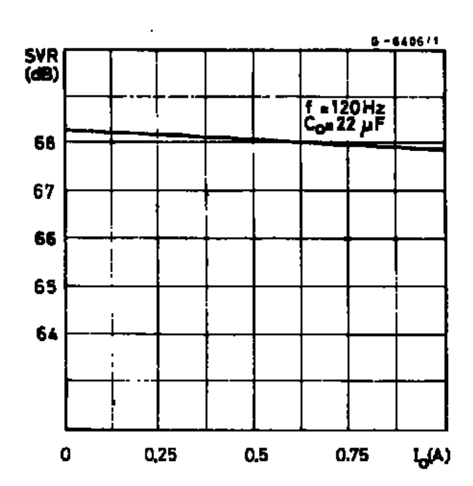


Figure 15 : Load Dump Characteristics.

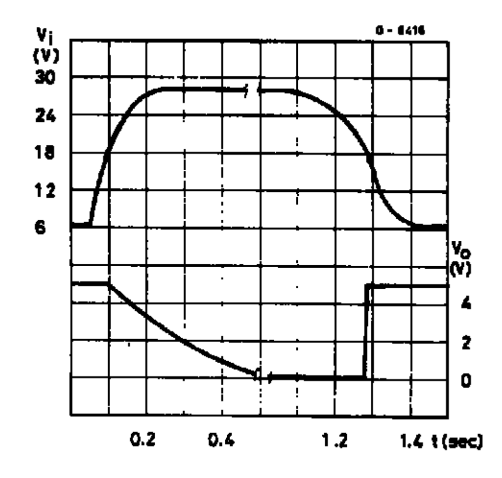


Figure 16 : Line Transient Response.

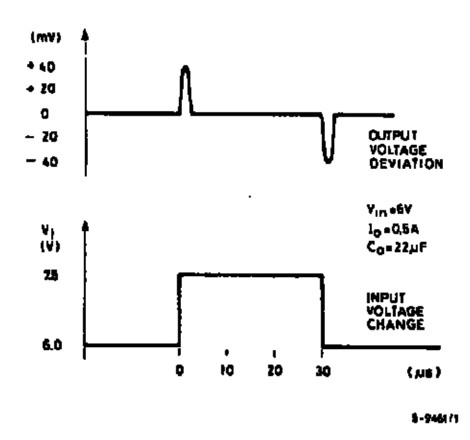


Figure 17 : Load Transunt Response.

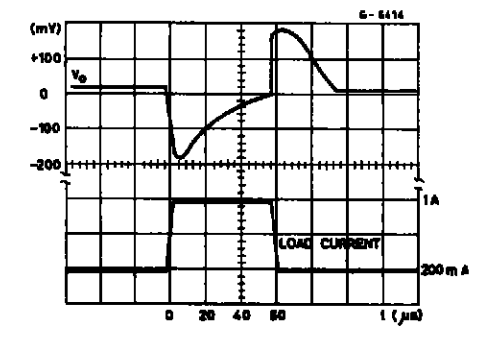


Figure 18 : Total Power Dissipation (TO-220).

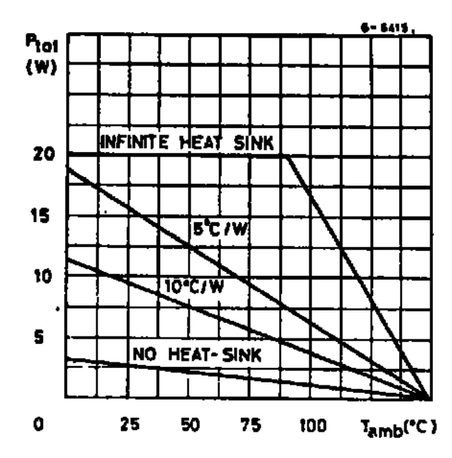
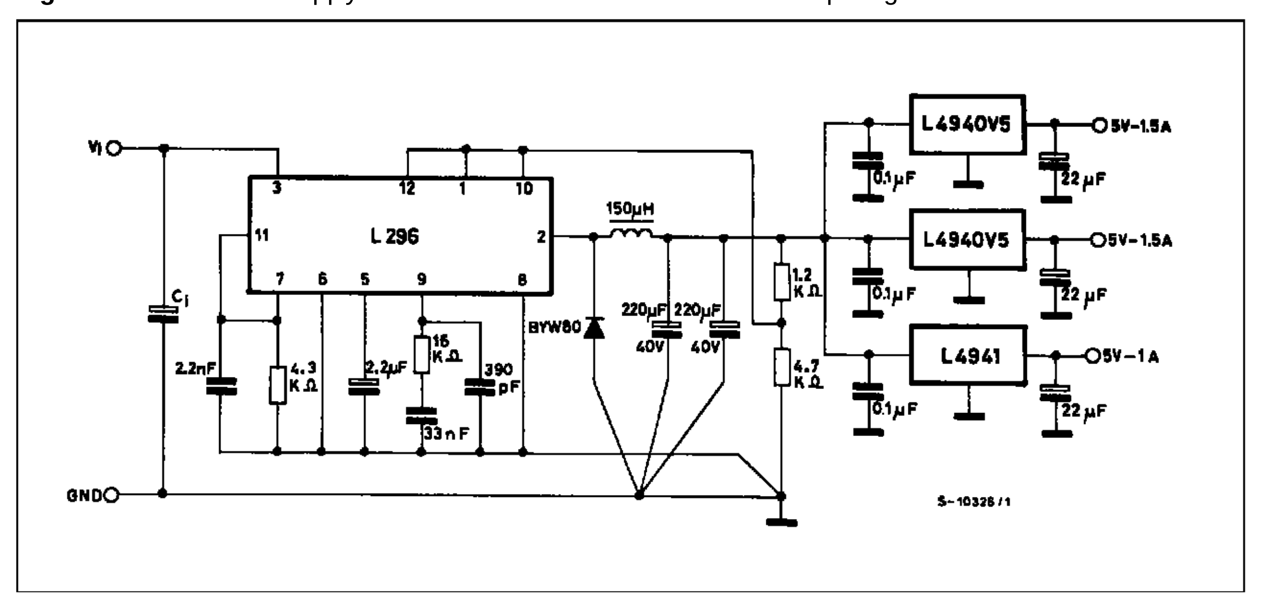


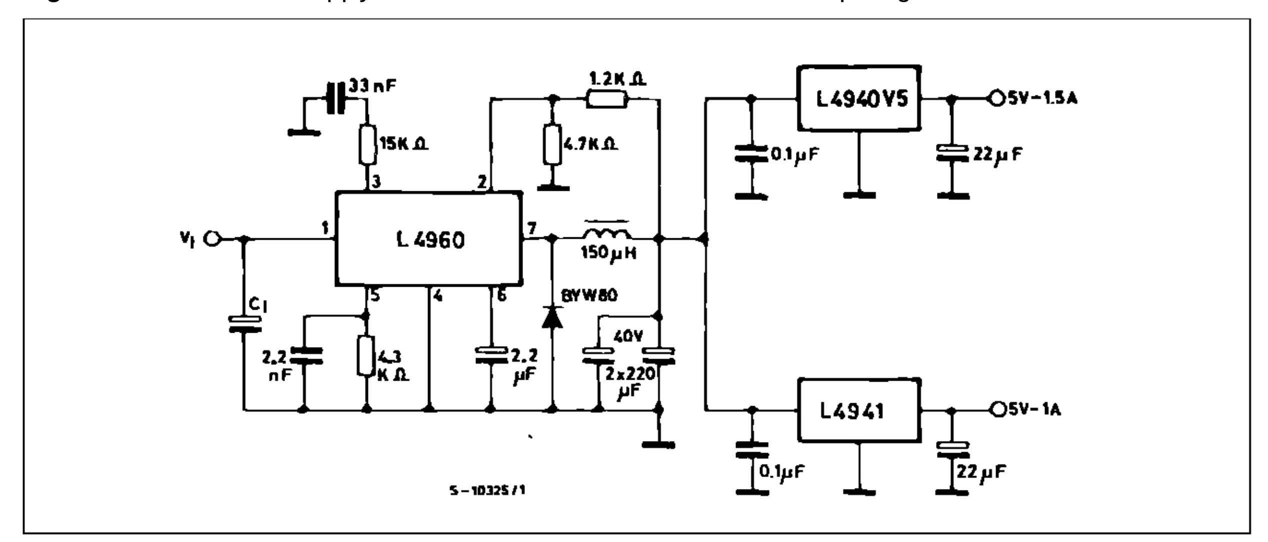
Figure 19 : Distribued Supply with On-card L4940 and L4941 Low-drop Regulators.



ADVANTAGES OF THESE APPLICATIONS ARE :

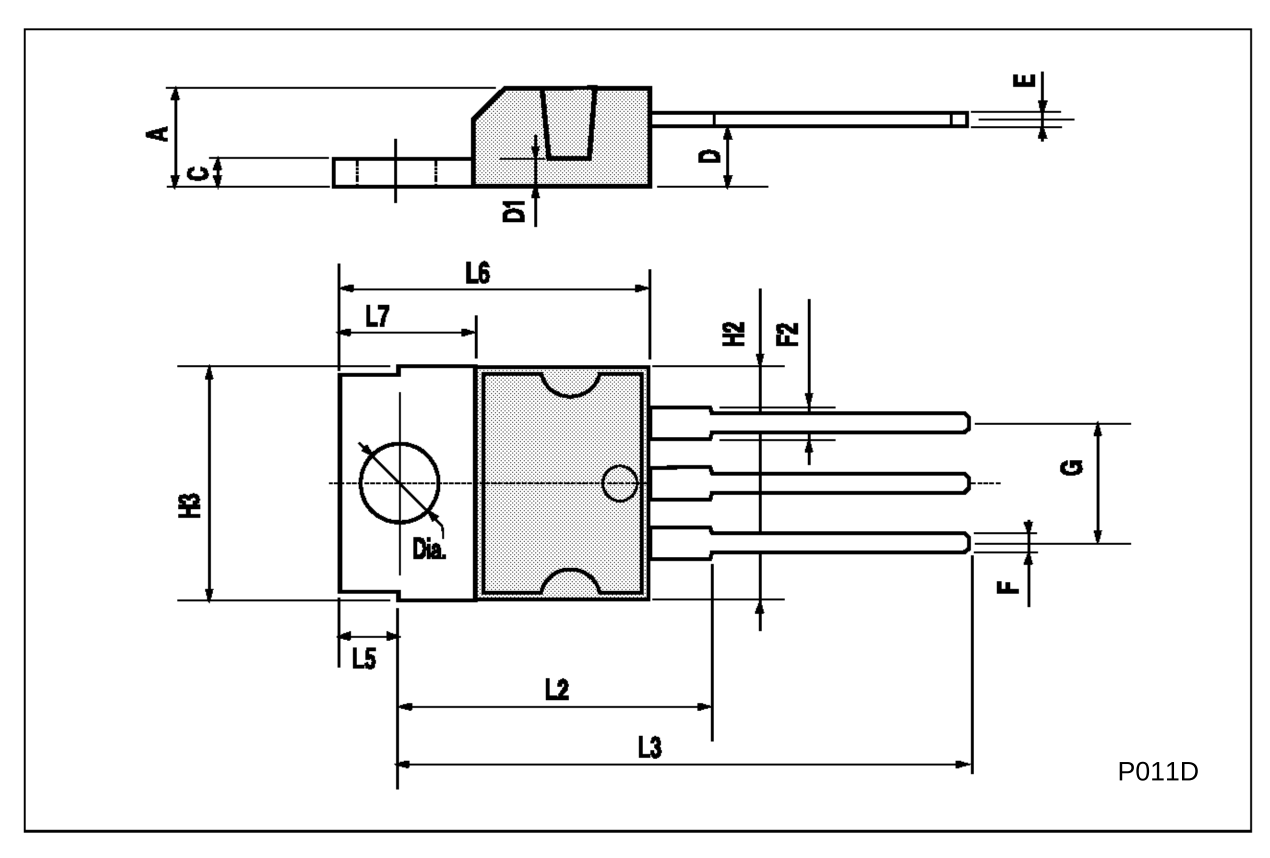
- On card regulation with short-circuit and thermal protection on each output.
- Very high total system efficiency due to the switching preregulation and very low-drop postregulations.

Figure 20 : Distribued Supply with On-card L4940 and L4941 Low-drop Regulators.



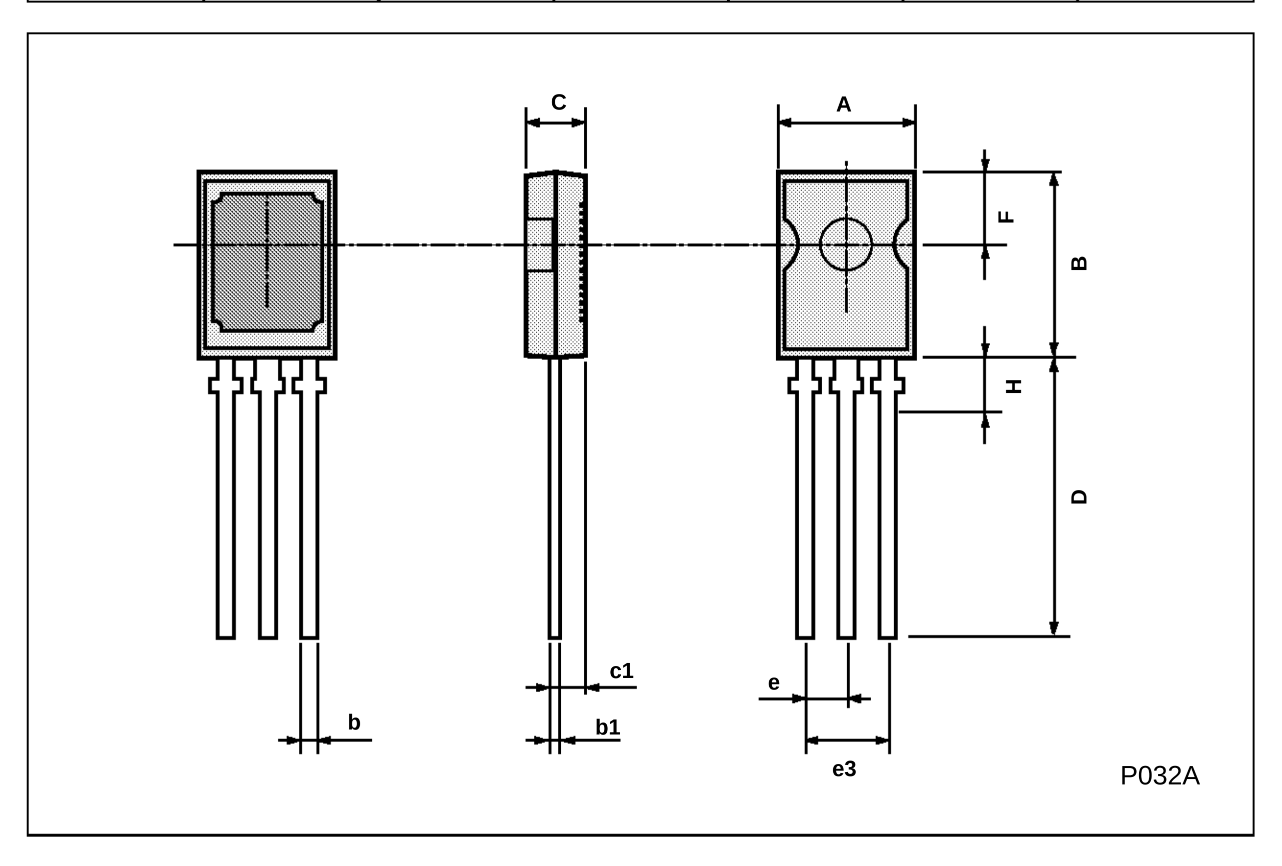
TO-220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.8		1.05	0.031		0.041
F2	1.15		1.4	0.045		0.055
G	4.95	5.08	5.21	0.195	0.200	0.205
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L2		16.2			0.638	
L3	26.3	26.7	27.1	1.035	1.051	1.067
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
Dia.	3.65		3.85	0.144		0.152



SOT-82 MECHANICAL DATA

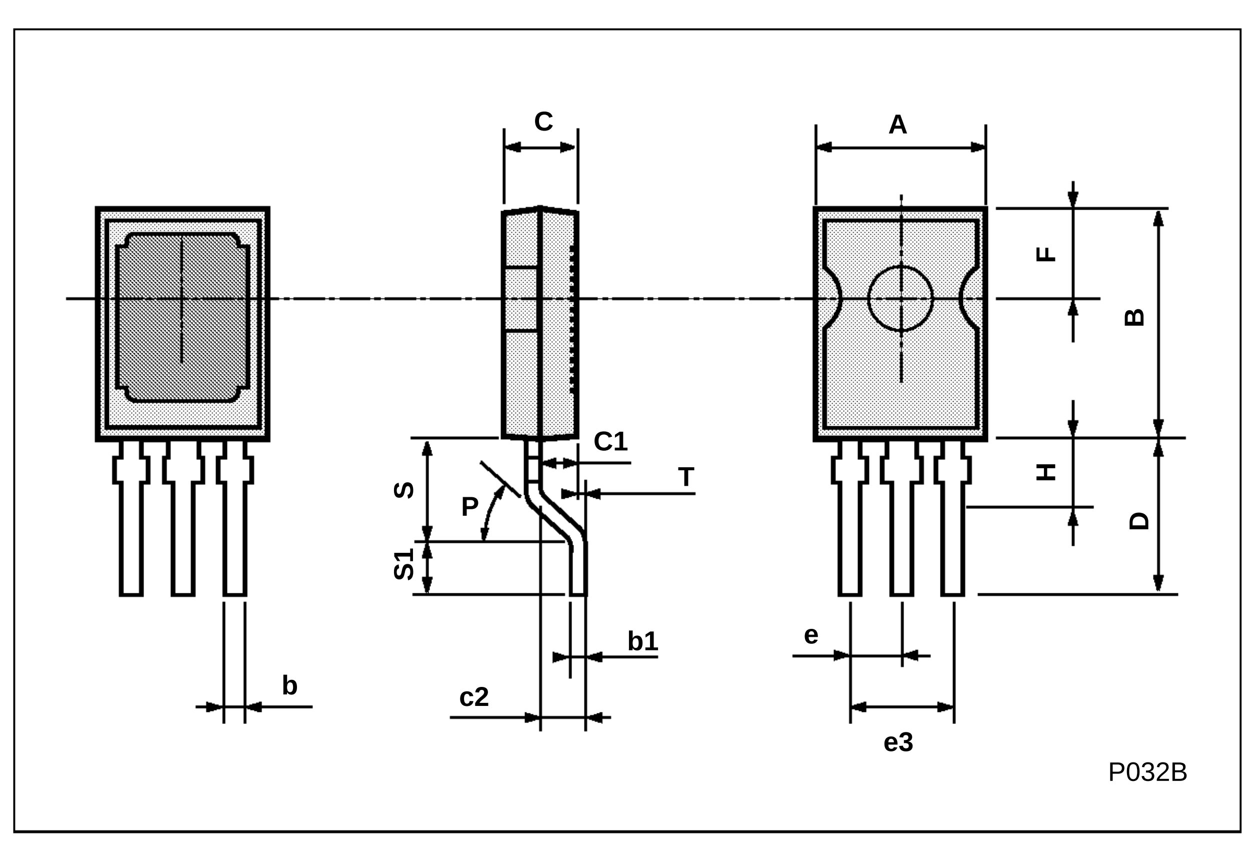
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		11.3	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.04		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
H			2.54		0.100	



SGS-THOMSON MICROELECTRONICS

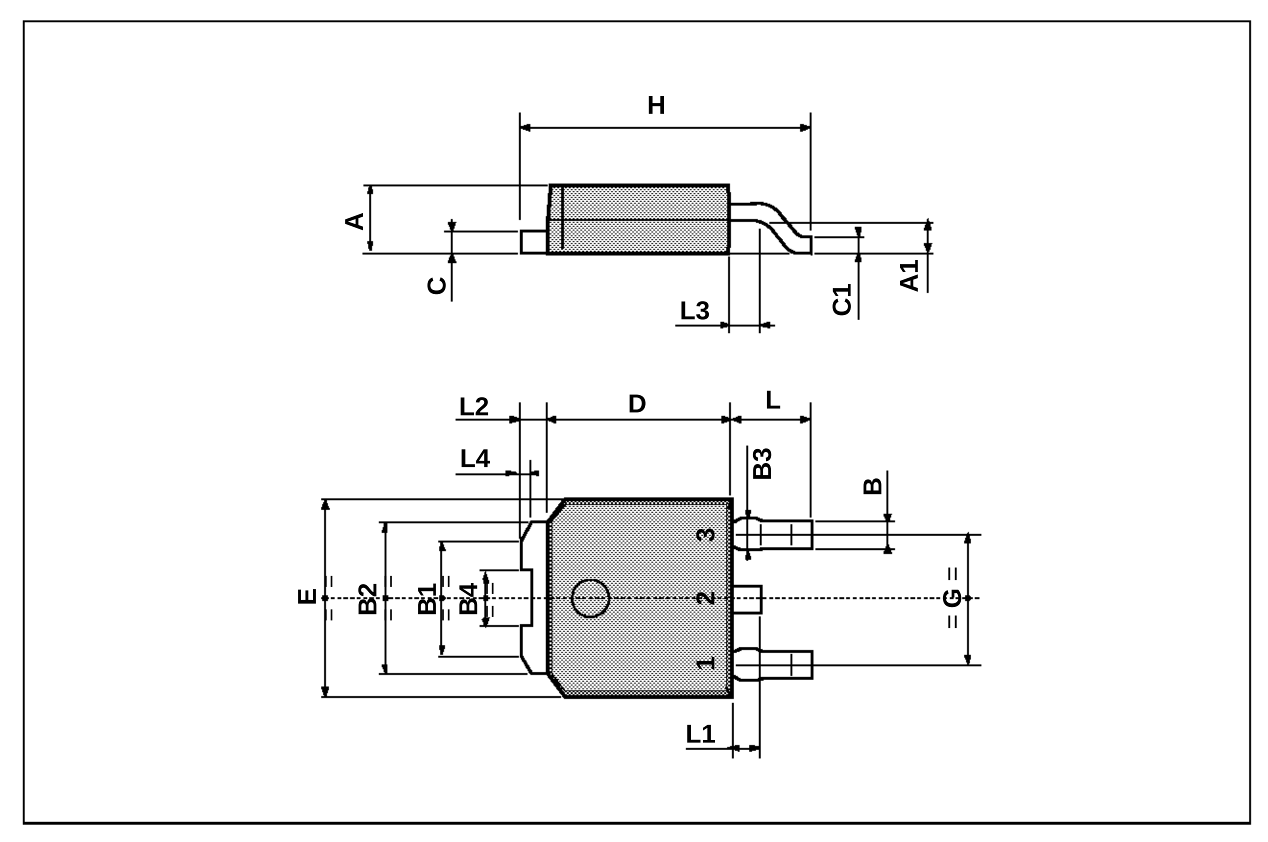
SOT-194 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		11.3	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.094		0.106
c1		1.2			0.047	
c2		1.3			0.051	
D		6			0.236	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
H			2.54			0.100
P	45° (typ.)					
S		4			0.157	
S1		2			0.079	
T		0.1			0.004	



TO-252 (DPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
B	0.64		0.8	0.025		0.031
B1	3.4		3.6	0.133		0.141
B2	5.2		5.4	0.204		0.212
B3			0.9			0.035
B4	1.9		2.1	0.074		0.082
C	0.48		0.6	0.018		0.023
C1	0.45		0.6	0.017		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L	2.55		3.05	0.100		0.120
L1	0.6		1	0.023		0.039
L2		0.8			0.031	
L3	0.8		1.2	0.031		0.047
L4	0.3		0.45	0.012		0.017




SGS-THOMSON
MICROELECTRONICS